

WHAT IS CLAIMED IS:

1. A method of cleaning a structure having interior surfaces, the method comprising the steps of:

5 combining a cleaning gas and liquid droplets together to form a gas and liquid droplet mixture; and

passing said gas and droplet mixture through the structure so as to provide a washing momentum of said mixture on the interior surfaces.

10 2. The method of claim 1 further comprising the step of:
directing said mixture including particulate matter through a heat exchanger so as to condense said liquid droplets and the particulate matter from said gas.

15 3. The method of claim 2 further comprising the step of:
directing said liquid droplets and the particulate matter through a filter to separate the particulate matter from the liquid associated with said liquid droplets.

20 4. The method of claim 3 further comprising the step of:
directing the liquid to a rotameter for measurement of the quantity of liquid passing through the structure.

25 5. The method of claim 1 further comprising the step of filtering and heating said cleaning gas prior to combining it with said liquid droplets.

6. The method of claim 1 wherein said cleaning gas is ambient air and said liquid droplets are misted water droplets.

7. The method of claim 1 further comprising the step of repeating the steps of combining said cleaning gas and said liquid droplets to form a gas and liquid droplet mixture and directing said mixture through the structure.

5 8. The method of claim 1 further comprising the step of accumulating said cleaning gas in an accumulator prior to combining it with said liquid droplets.

10 9. The method of claim 1 further comprising the step of regulating the flows of said cleaning gas and said cleaning liquid into a mixture chamber for mixing said cleaning gas with said liquid droplets.

15 10. The method of claim 1 further comprising the step of controlling the flows of said cleaning gas and said cleaning liquid to just cause the onset of roll waves along the interior surfaces of the structure.

20 11. A system for cleaning a structure comprising:
a cleaning gas accumulator for retaining a cleaning gas;
a mixing chamber for combining said cleaning gas and liquid droplets;
and

25 a coupling to couple an outlet of said mixing chamber to the structure, wherein said coupling is designed to direct the combination of said cleaning gas and said liquid droplets to one or more surfaces of the structure to be cleaned in a sheeting manner.

12. The system of claim 11 further comprising a control valve coupling said accumulator to said mixing chamber.

30 13. The system of claim 12 further comprising a filter for receiving said cleaning gas and a heater coupled between said filter and said accumulator.

14. The system of claim 11 further comprising a heat exchanger for receiving the combination of said cleaning gas and said liquid droplets with particulate from the structure and condensing said liquid and the particulate from said cleaning gas.

15. The system of claim 14 further comprising a filter coupled to said heat exchanger for separating the particulate from said liquid.

16. The system of claim 15 further comprising a rotameter coupled to said filter for receiving and measuring a quantity of said liquid.

17. The system of claim 16 further comprising a gas return duct for returning gas from said heat exchanger to an inlet associated with said accumulator and a liquid return duct for returning liquid from said rotameter to a liquid inlet associated with said mixing chamber.

18. The system of claim 11 wherein said cleaning gas is ambient air and said liquid is water.

19. The system of claim 11 wherein the structure is a gas turbine bucket